

# Claims

- [c1] 1. A manual handle apparatus for use in selectively setting at least one of a plurality of vise jaws to clamp and unclamp a workpiece in a vise having a base utilizing a vise shaft that converts rotational motion into relative axial movement of at least one of the plurality of vise jaws, comprising:
- (a) a disc including a disc face and a disc annular surface, said disc having a disc axial axis substantially perpendicular to said disc face, the disc axial axis being positioned in a central portion of said disc, said disc also includes an aperture therethrough positioned coincident with the disc axial axis, said aperture is sized and configured to rotatably drive the vise shaft, said disc also having an outer periphery with a corrugated surface adapted to provide a hand grip for a user, said periphery not extending beyond the vise base; and
  - (b) a hub including a proximal end portion and a distal end portion, said hub having a hub axial axis extending between said proximal end portion and said distal end portion, said hub proximal end portion is adjacent to said disc annular surface with the hub axial axis positioned coaxial to the disc axial axis with said hub form-

ing an extension from said disc annular surface, said hub also includes an aperture therethrough aligned with said disc aperture therethrough, said hub distal end portion positioned to face the vise, said hub also having an outer surface not extending to said disc outer periphery between said hub proximal end portion and said hub distal end portion such that an annular recess is formed between said disc annular surface and said hub outer surface, wherein said annular recess is operational to allow a user's hand to exert axial force on said disc annular surface away from the vise to remove said manual handle apparatus from the shaft and said corrugated surface that is adapted to provide a hand grip is operational to limit a rotational torque on the vise shaft resulting in a limit on the user's hand to close at least one of the plurality of vise jaws to clamp the workpiece such that an amount of clamping force placed upon the workpiece is limited by a frictional grip of the user's hand on said disc periphery.

[c2] 2. A manual handle apparatus according to claim 1 wherein said disc and said hub are affixed to one another.

[c3] 3. A manual handle apparatus according to claim 1 wherein said disc and said hub are integral to one another.

- [c4] 4. A manual handle apparatus according to claim 1 wherein said disc and said hub are detachable from one another.
- [c5] 5. A manual handle apparatus according to claim 1 further comprising a means for axially retaining said manual handle apparatus to the shaft.
- [c6] 6. A manual handle apparatus according to claim 1 further comprising a crank rotatably engaged to said disc face, wherein said crank is operational in the user's hand to quickly rotate said disc and open at least one of the plurality of vise jaws to position the vise jaws to accept the workpiece.
- [c7] 7. A manual handle apparatus according to claim 1 wherein said disc has indicia superimposed on said disc face.
- [c8] 8. A manual handle apparatus for use in selectively setting at least one of a plurality of vise jaws to clamp and unclamp a workpiece in a vise having a base utilizing a vise shaft that converts rotational motion into relative axial movement of at least one of the plurality of vise jaws, comprising:
- (a) a disc including a disc face and a disc annular surface, said disc having a disc axial axis substantially per-

pendicular to said disc face, the disc axial axis being positioned in a central portion of said disc, said disc also having an outer periphery with a corrugated surface adapted to provide a hand grip for a user, said periphery not extending beyond the vise base; and

(b) a hub including a proximal end portion and a distal end portion, said hub having a hub axial axis extending between said proximal end portion and said distal end portion, said hub proximal end portion is adjacent to said disc annular surface with the hub axial axis positioned coaxial to the disc axial axis with said hub forming an extension from said disc annular surface, said hub also includes an aperture therethrough with said hub aperture being sized and configured to rotatably drive the vise shaft, said hub distal end portion positioned to face the vise, said hub also having an outer surface not extending to said disc outer periphery between said hub proximal end portion and said hub distal end portion such that an annular recess is formed between said disc annular surface and said hub outer surface, wherein said annular recess is operational to allow a user's hand to exert axial force on said disc annular surface away from the vise to remove said manual handle apparatus from the shaft and said corrugated surface that is adapted to provide a hand grip is operational to limit a rotational torque on the vise shaft resulting in a limit on the user's

hand to close at least one of the plurality of vise jaws to clamp the workpiece such that an amount of clamping force placed upon the workpiece is limited by a frictional grip of the user's hand on said disc periphery.

- [c9] 9. A manual handle apparatus according to claim 8 wherein said disc and said hub are affixed to one another.
- [c10] 10. A manual handle apparatus according to claim 8 wherein said disc and said hub are integral to one another.
- [c11] 11. A manual handle apparatus according to claim 8 wherein said disc and said hub are detachable from one another.
- [c12] 12. A manual handle apparatus according to claim 8 further comprising a means for axially retaining said manual handle apparatus to the shaft.
- [c13] 13. A manual handle apparatus according to claim 8 further comprising a crank rotatably engaged to said disc face, wherein said crank is operational in the user's hand to quickly rotate said disc and open at least one of the plurality of vise jaws to position the vise jaws to accept the workpiece.

[c14] 14. A manual handle apparatus according to claim 8 wherein said disc has indicia superimposed on said disc face.

[c15] 15. A method of using a manual handle apparatus for use in selectively setting at least one of a plurality of vise jaws to clamp and unclamp a workpiece in a vise having a base utilizing a vise shaft that converts rotational motion into relative axial movement of at least one of the plurality of vise jaws, comprising the steps of:

(a) providing a manual handle apparatus that includes a disc including a disc face and a disc annular surface, said disc having a disc axial axis substantially perpendicular to said disc face, the disc axial axis being positioned in a central portion of said disc, said disc also includes an aperture therethrough positioned coincident with the disc axial axis, said aperture is sized and configured to rotatably drive the vise shaft, said disc also having an outer periphery with a corrugated surface adapted to provide a hand grip, said periphery not extending beyond the vise base and a hub including a proximal end portion and a distal end portion, said hub having a hub axial axis extending between said proximal end portion and said distal end portion, said hub proximal end portion is adjacent to said disc annular surface with the hub axial axis positioned coaxial to the disc axial axis with

said hub forming an extension from said disc annular surface, said hub also includes an aperture therethrough aligned with said disc aperture therethrough, said hub distal end portion positioned to face the vise, said hub also having an outer surface not extending to said disc outer periphery between said hub proximal end portion and said hub distal end portion such that an annular recess is formed between said disc annular surface and said hub outer surface, said annular recess is operational to allow a user's hand to exert axial force on said disc annular surface away from the vise to remove said manual handle apparatus from the shaft;

(b) grasping said disc outer periphery in the user's hand;

(c) aligning said hub aperture of said hub distal end portion to the vise shaft and axially sliding said hub aperture onto the vise shaft and continuing to slide the shaft through said disc aperture until the shaft is flush with or extends beyond said disc face;

(d) spinning said disc outer periphery by grasping said disc outer periphery in the user's hand to open at least one of the plurality of vise jaws to position the vise jaws to accept the workpiece; and

(e) rotating said disc outer periphery by grasping said disc outer periphery in the user's hand to close at least one of the plurality of vise jaws to clamp the workpiece such that an amount of clamping force placed upon the

workpiece is limited by a frictional grip of the user's hand on said disc periphery.

- [c16] 16. A method of using a manual handle apparatus according to claim 15 wherein said step of providing said manual handle apparatus further includes a means for axially retaining said manual handle apparatus to the shaft and an additional step after said aligning step further comprising engaging said means between said manual handle apparatus and the shaft being operational to retain said manual handle apparatus on the shaft.
- [c17] 17. A method of using a manual handle apparatus according to claim 15 wherein said step of providing said manual handle apparatus further includes a crank rotatably engaged to said disc face and wherein said step of spinning is accomplished by grasping said crank in the user's hand being operational to quickly rotate said disc and open at least one of the plurality of vise jaws to position the vise jaws to accept the workpiece.
- [c18] 18. A method of using a manual handle apparatus for use in selectively setting at least one of a plurality of vise jaws to clamp and unclamp a workpiece in a vise having a base utilizing a vise shaft that converts rotational motion into relative axial movement of at least one of the plurality of vise jaws, comprising the steps of:



(a) providing a manual handle apparatus that includes a disc including a disc face and a disc annular surface, said disc having a disc axial axis substantially perpendicular to said disc face, the disc axial axis being positioned in a central portion of said disc, said disc also having an outer periphery with a corrugated surface adapted to provide a hand grip, said periphery not extending beyond the vise base and a hub including a proximal end portion and a distal end portion, said hub having a hub axial axis extending between said proximal end portion and said distal end portion, said hub proximal end portion is adjacent to said disc annular surface with the hub axial axis positioned coaxial to the disc axial axis with said hub forming an extension from said disc annular surface, said hub also includes an aperture therethrough, said hub distal end portion positioned to face the vise, said hub also having an outer surface not extending to said disc outer periphery between said hub proximal end portion and said hub distal end portion such that an annular recess is formed between said disc annular surface and said hub outer surface, said annular recess is operational to allow a user's hand to exert axial force on said disc annular surface away from the vise to remove said manual handle apparatus from the shaft;

(b) grasping said disc outer periphery in the user's hand;

(c) aligning said hub aperture of said hub distal end por-

tion to the vise shaft and axially sliding said hub aperture onto the vise shaft and continuing to slide the shaft through said hub aperture until the shaft contacts said disc;

(d) spinning said disc outer periphery by grasping said disc outer periphery in the user's hand to open at least one of the plurality of vise jaws to position the vise jaws to accept the workpiece; and

(e) rotating said disc outer periphery by grasping said disc outer periphery in the user's hand to close at least one of the plurality of vise jaws to clamp the workpiece such that an amount of clamping force placed upon the workpiece is limited by a frictional grip of the user's hand on said disc periphery.

[c19] 19. A method of using a manual handle apparatus according to claim 18 wherein said step of providing said manual handle apparatus further includes a means for axially retaining said manual handle apparatus to the shaft and an additional step after said aligning step further comprising engaging said means between said manual handle apparatus and the shaft being operational to retain said manual handle apparatus on the shaft.

[c20] 20. A method of using a manual handle apparatus according to claim 18 wherein said step of providing said manual handle apparatus further includes a crank rotat-

ably engaged to said disc face and wherein said step of spinning is accomplished by grasping said crank in the user's hand being operational to quickly rotate said disc and open at least one of the plurality of vise jaws to position the vise jaws to accept the workpiece.